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Reply to Office Action mailed September 6, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. (currently amended) A chemical treatment method by which a metal film formed on a substrate is etched into a predetermined pattern comprising:

(a) providing a material comprising a first metal film coated on a substrate and a second metal film formed on said first metal film, said first metal film having a metal passivated layer on an exposed surface thereof, said first metal film being formed from a metal selected from the group consisting of chromium, titanium, tungsten, palladium and molybdenum, or an alloy thereof, said second metal film having a predetermined pattern,

(b) immersing said material and a positive electrode in an acidic reduction treatment solution containing an acid radical, wherein a portion of the first metal film on said material is dipped into the acidic reduction treatment

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solution, connecting the positive electrode and a metal portion of said material to an electrolytic circuit such that said material is a cathode and applying an electric current to the cathode and the positive electrode to carry out an electrolysis, thereby producing nascent hydrogen, whereby said nascent hydrogen reduces said metal passivated layer to said first metal or an alloy thereof; and then

(c) etching the first metal film by contacting an exposed portion of said first metal or an alloy thereof with an acidic etching treatment solution to form the predetermined pattern.

Claim 2. (previously presented) A method according to claim 1, whereby in step (b), the acidic reduction treatment solution comprises a compound selected from the group consisting of hydrochloric acid, sulfuric acid, carboxylic acid, hydrofluoric acid and phosphoric acid.

Claim 3. (canceled)

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Claim 4. (currently amended) A method according to claim 1, wherein the acidic etching treatment solution contains a halogen chloride ion.

Claim 5. (currently amended) A chemical treatment method by which a metal film formed on a substrate is etched into a predetermined pattern comprising:

(a) providing a material comprising a first metal film coated on a substrate and a second metal film formed on said first metal film, said first metal film having a metal passivated layer on an exposed surface thereof, said first metal film being formed from a metal selected from the group consisting of chromium, titanium, tungsten, palladium and molybdenum, or an alloy thereof,

(b) immersing said material and a positive electrode in a reduction treatment solution containing a halogen ion, wherein a portion of the first metal film on said material is dipped into the reduction treatment solution, connecting the positive electrode and a metal portion of said material to an electrolytic circuit such that said material is a cathode and applying an electric current to the cathode and the positive

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electrode to carry out an electrolysis, thereby producing nascent hydrogen, whereby said nascent hydrogen reduces said metal passivated layer to said first metal or an alloy thereof; and

(c) dipping said material into an acidic etching treatment solution so that an exposed portion of said first metal or an alloy thereof is in contact with said acidic etching treatment solution to form a predetermined pattern.

Claim 6. (currently amended) A method according to claim claims 1 or 5, wherein the acidic etching treatment solution contains a halogen ion.

Claim 7. (previously presented) A method according to claim 6, wherein the halogen ion in the acidic etching treatment solution is a chloride ion.

Claim 8. (canceled)

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Claim 9. (currently amended) A method according to claim [[8]] claims 1 or 5, wherein the first metal film is an alloy of chromium.

Claim 10. (previously presented) A method according to claim [8]] claims 1 or 5, wherein the first metal film is an alloy of chromium.

Claim 11. (canceled)

Claim 12. (canceled)

Claim 13. (currently amended) A method according to ~~any one~~ [[of]] claims 1 [[, 2, 4,]] or 5 [[or 11]], wherein the first metal film is formed from an alloy containing chromium.

Claims 14 to 24. (canceled)

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Claim 25. (previously presented) A method according to claim 5, wherein the halogen ion in the reduction treatment solution is a chloride ion.

Claim 26. (canceled)

Claim 27. (currently amended) A method according to ~~claim~~ claims 1 or 5, wherein the first metal film comprises a nickel chromium alloy.

Claim 28. (canceled)

Claim 29. (canceled)

Claim 30. (withdrawn - currently amended) A chemical treatment method by which a metal film formed on a substrate is etched into a predetermined pattern comprising:

(a) providing a material comprising a first metal film coated on a substrate and a second metal film formed on said first metal film, said first metal film having a metal passivated layer on an exposed surface thereof, said first metal film

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being formed from a metal selected from the group consisting of chromium, titanium, tungsten, palladium and molybdenum, or an alloy thereof, said second metal film having a predetermined pattern,

(b) immersing said material and a positive electrode in an alkaline reduction treatment solution containing a halogen ion, connecting the positive electrode and a metal portion of said material to an electrolytic circuit such that said material is a cathode and applying an electric current to the cathode and the positive electrode to carry out an electrolysis, thereby producing nascent hydrogen, whereby said nascent hydrogen reduces said metal passivated layer to said first metal or an alloy thereof; and then

(c) etching the first metal film by contacting an exposed portion of said first metal or an alloy thereof with an acidic etching treatment solution to form the predetermined pattern.

Claim 31. (withdrawn) A method according to claim 30, wherein in step (b), the alkaline reduction treatment solution which contains a halogen ion is selected from the group

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consisting of sodium chloride solution, potassium chloride solution and potassium iodide solution.

Claim 32. (withdrawn) A method according to claim 31, wherein the alkaline reduction treatment solution which contains a halogen ion is potassium chloride solution.

Claim 33. (withdrawn) A method according to claim 30, wherein the first metal film is chromium.

Claim 34. (withdrawn) A method according to claim 30, wherein the first metal film is an alloy of chromium.

Claim 35. (withdrawn) A method according to claim 30, wherein the first metal film comprises a nickel chromium alloy.

Claim 36. (new) A method according to claims 1 or 5, wherein the passivated layer is an oxide layer.

Claim 37. (new) A method according to claims 1 or 5, wherein the positive electrode is a plate.